Dynamic Positioning Committee
Marine Technology Society

SENSORS

Redundancy in Hydroacoustical Systems for DP Applications

Torger Torgensen
Kongsberg Maritime
Underwater Instrumentation – Horten, Norway

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REDUNDANCY IN HYDROACOUSTIC SYSTEMS

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Why ??

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SYSTEM REDUNDANCY

One system with internal redundancy.

Multiple Transducer elements/amplifiers

(graceful degradation).

Full network redundance.

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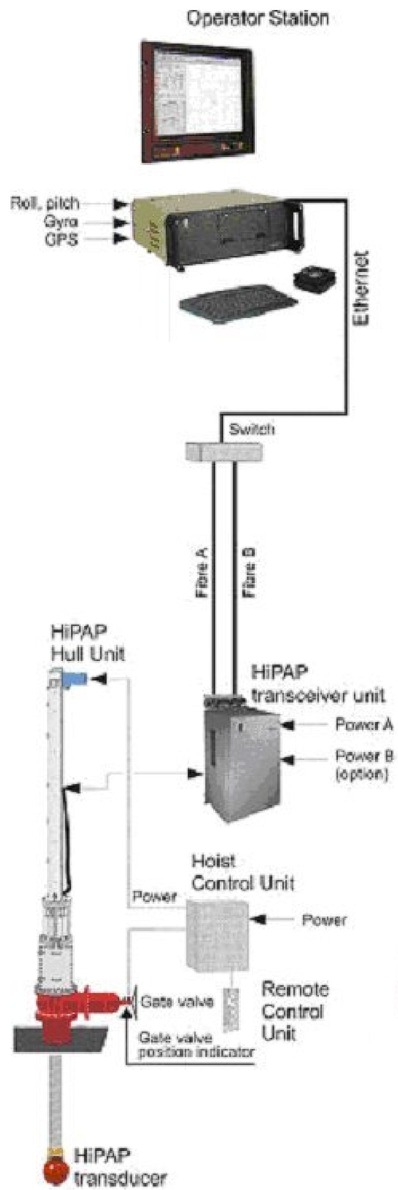
Vulnerable to transducer damage.



SYSTEM REDUNDANCY

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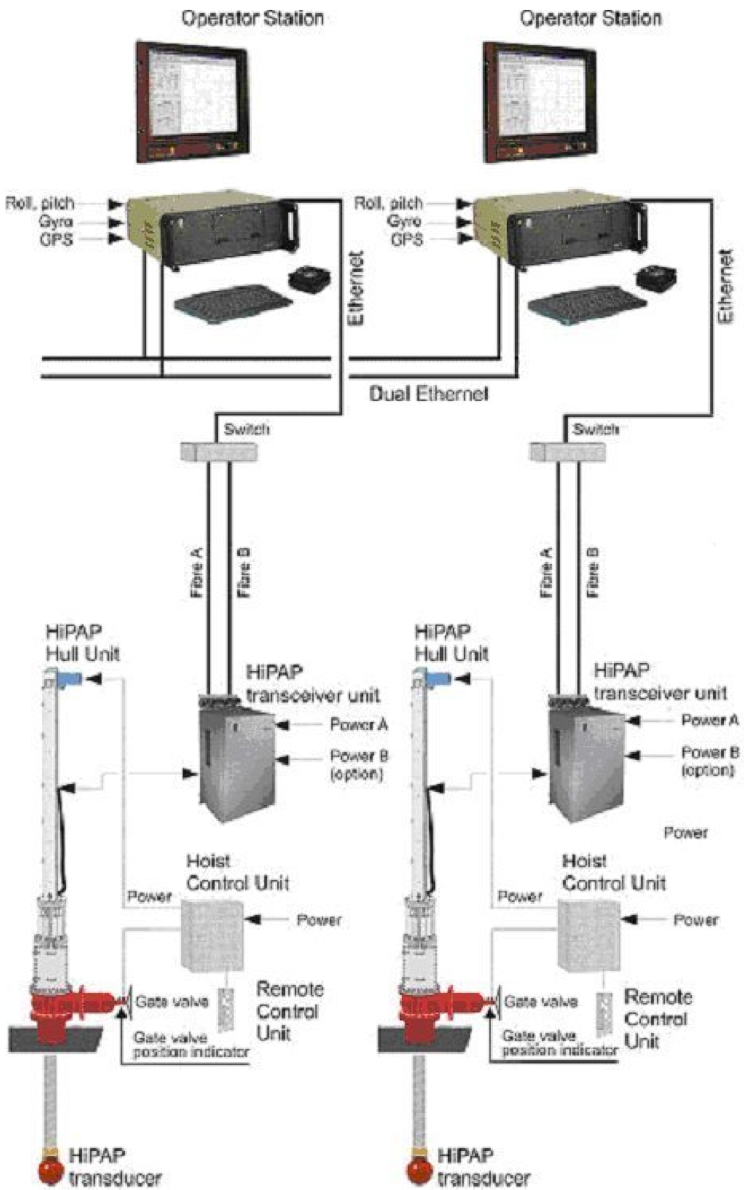

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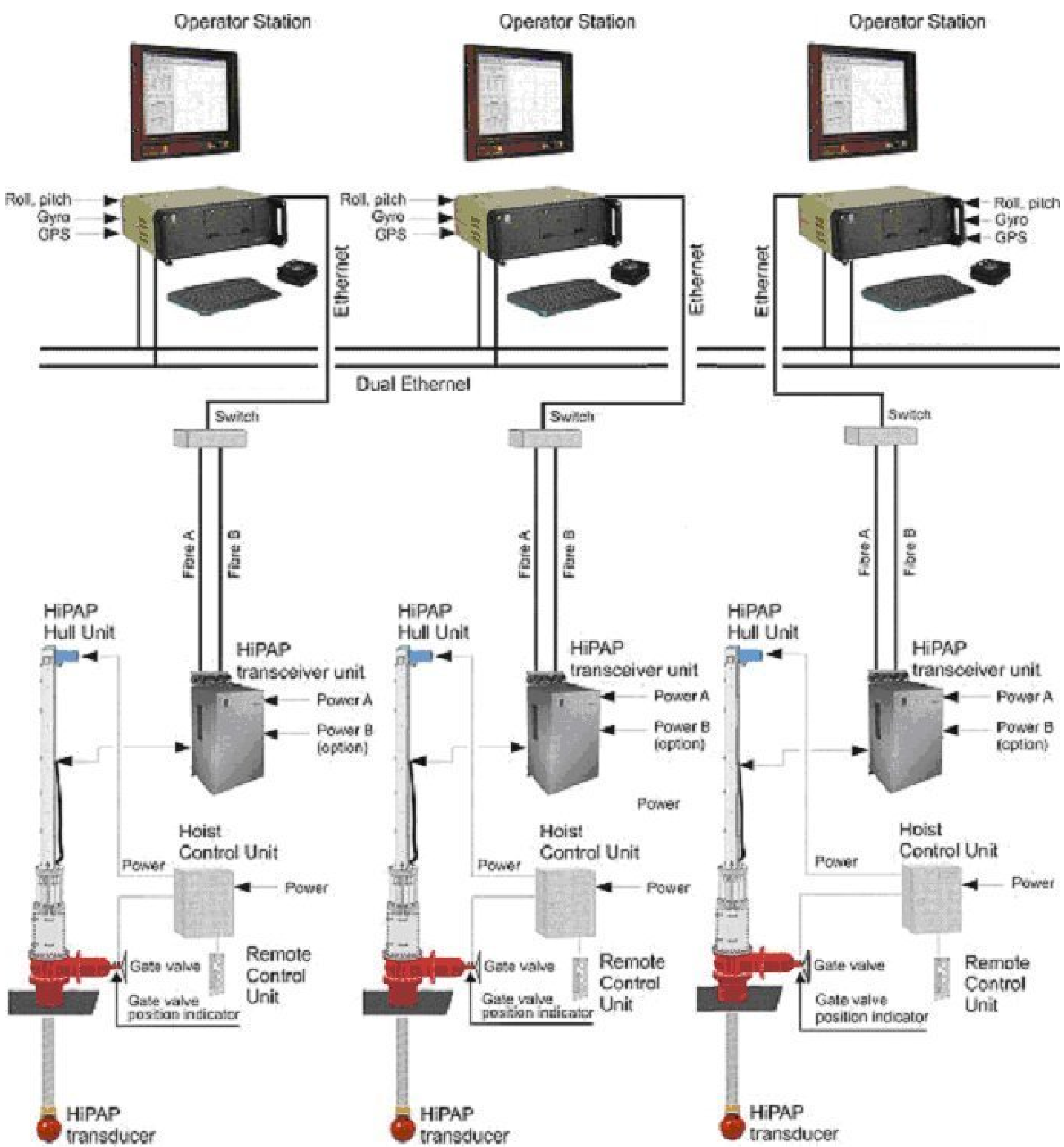
SYSTEM REDUNDANCY

Two operative systems with a third full system as redundancy

Not vulnerable to transducer damage even with two DP inputs required simultaneously.

DP will do the weighting, and reject positions from faulty system.



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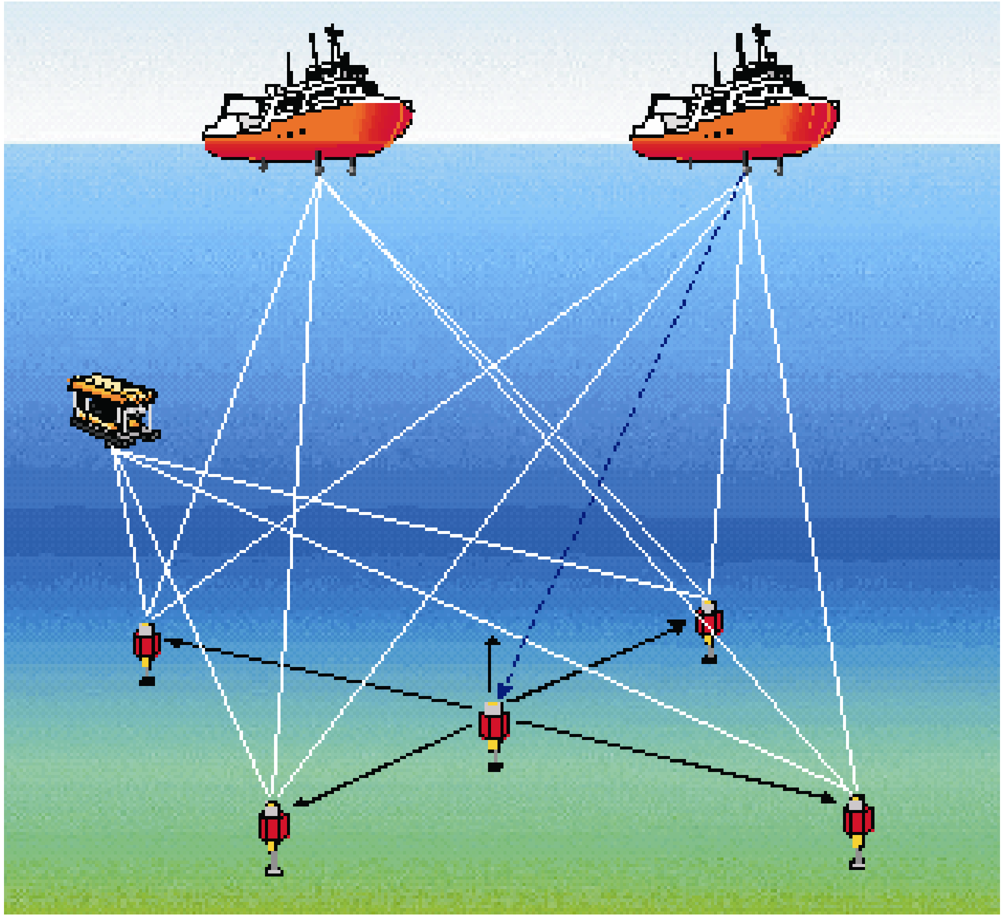
MULTI-USER MODE

One extra transponder acts as master for the other array transponders. Vessel systems in listening mode, position calculation based on delta ranges (and directions). Subsea transceivers can also be in the configuration (ROV's etc).



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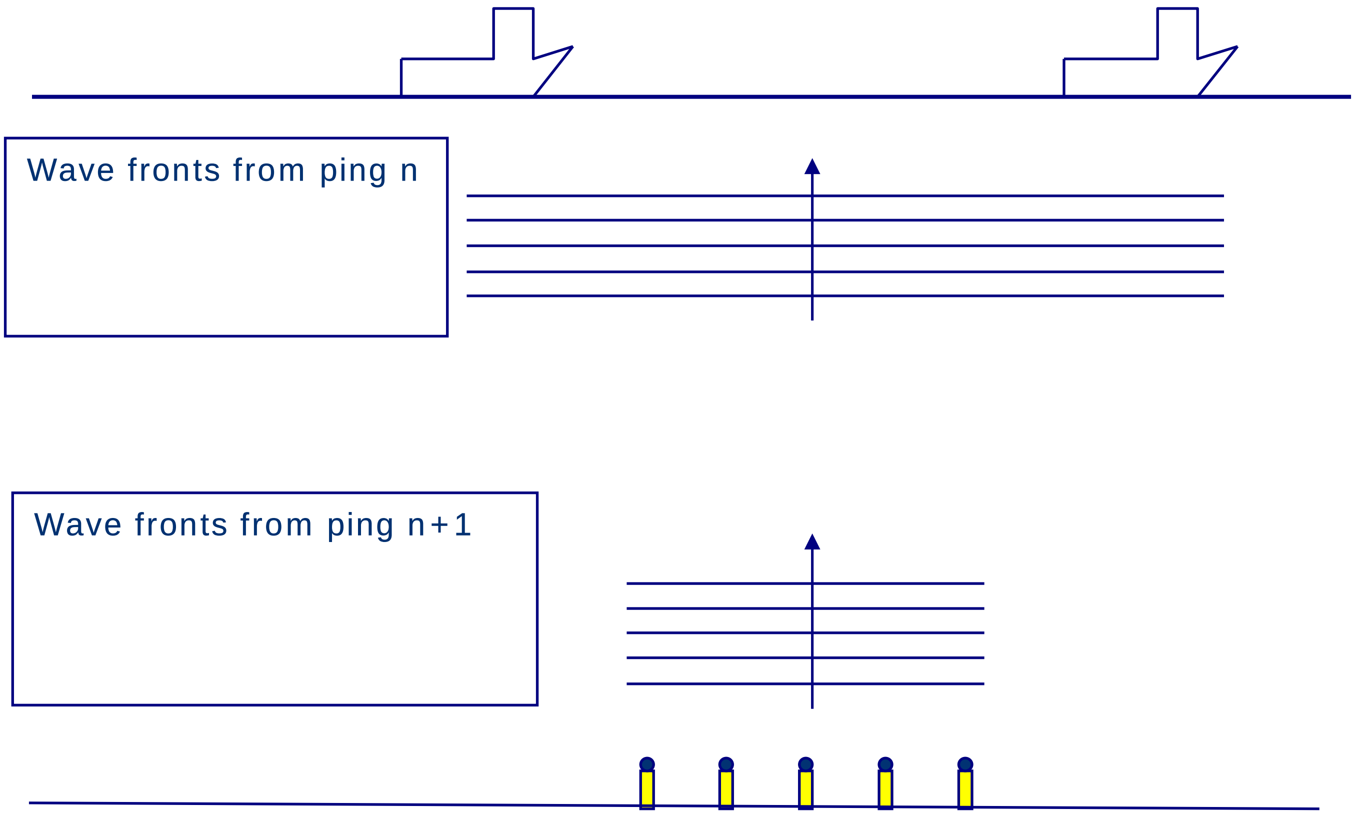

In deep water, several pulse trains from master transponder interrogations may be under way through the water simultaneously, thus water depth doesn't affect update rate.

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HYDROACOUSTICALLY AIDED INERTIAL NAVIGATION

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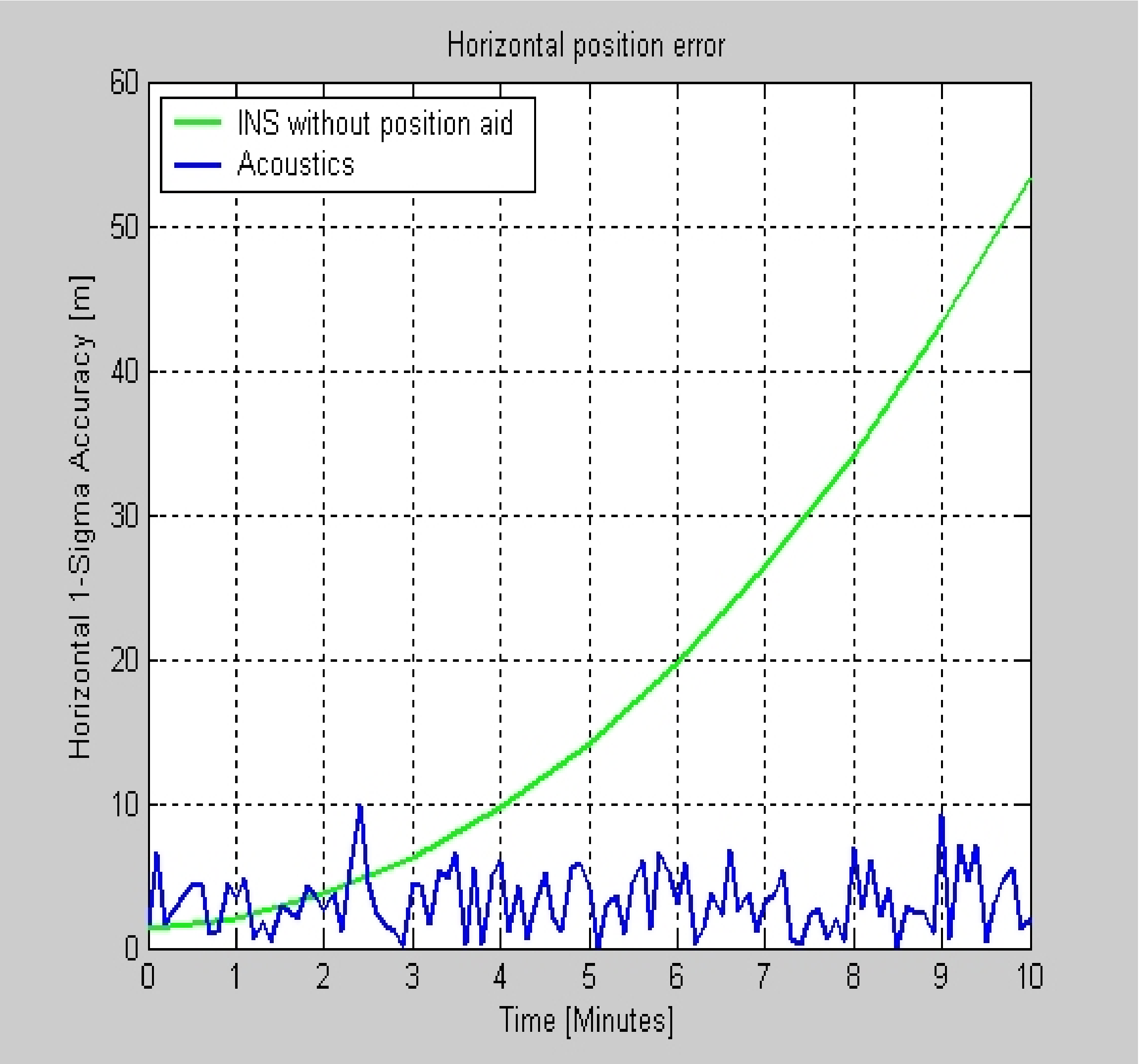
- **Acoustic positioning provides:**
  - **Relatively high and evenly distributed noise.**
  - **No drift in the position.**
- **Inertial positioning provides:**
  - **Very low short term noise.**
  - **Relatively large drift in the position.**



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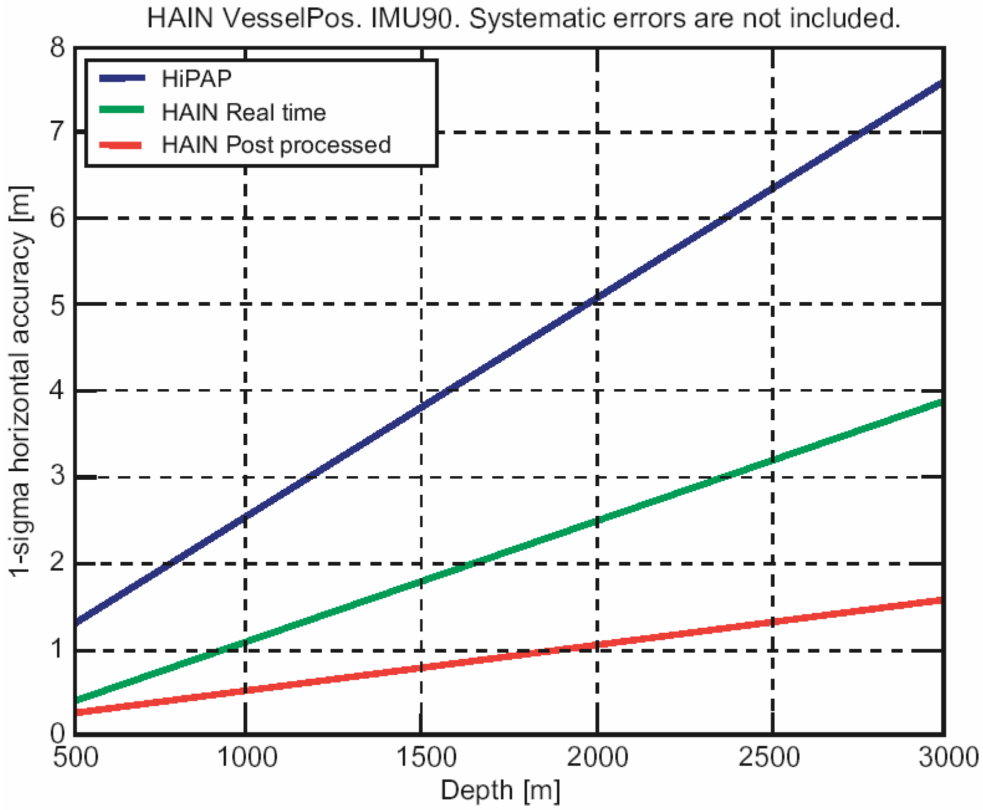
- **Accuracy achievement with inertial navigation.**



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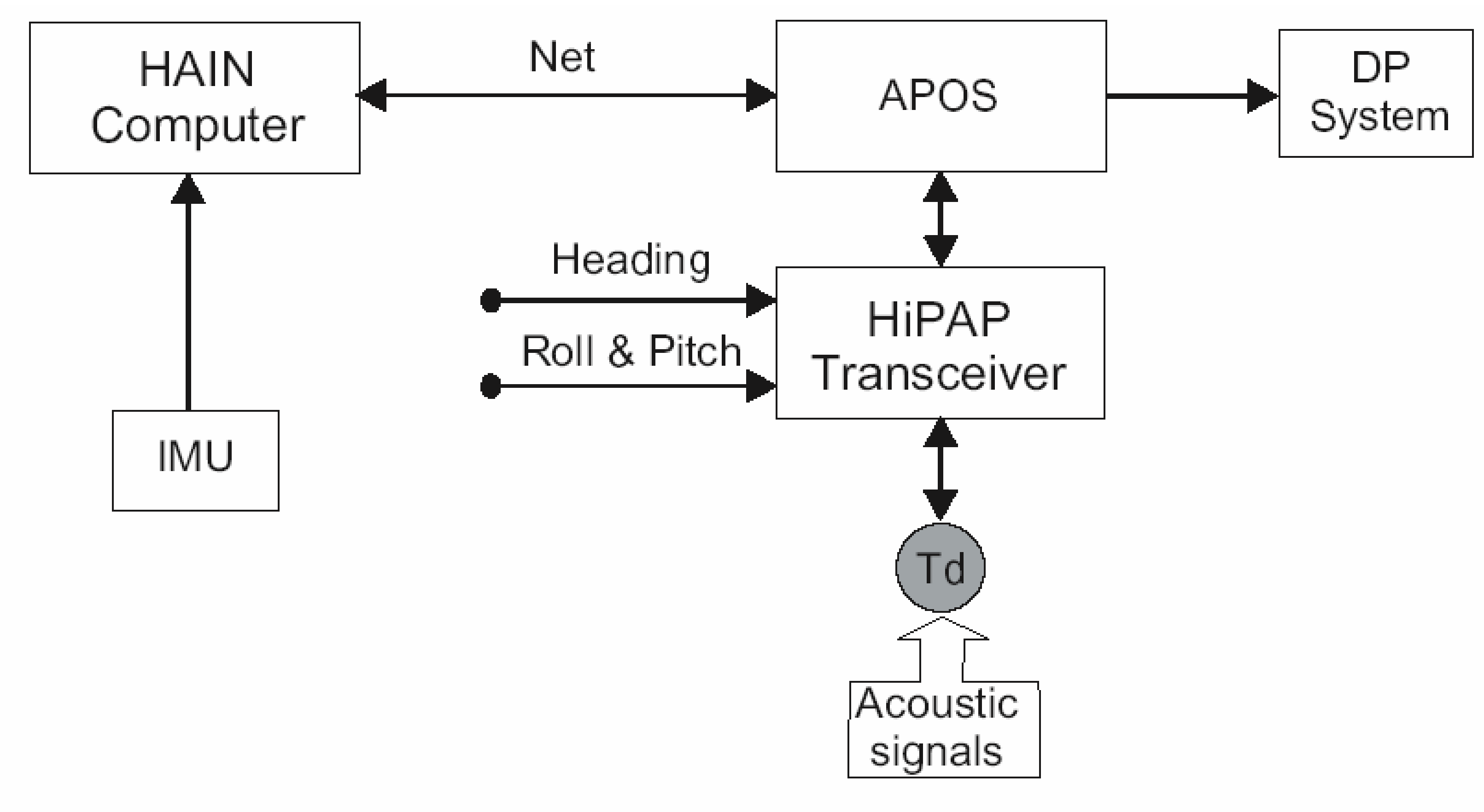

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